

# MATH METHODS REVIEW

$$1. \quad 2806 + 5465 = 2836 + X$$

+30  
-30

$$X = 5465 - 30 = 5435$$

②

$$6318 - X = 6518 - 3741$$

-200  
-200

Arrows point towards the side w/ variable

$$X = 3741 - 200 = 3541$$

③

$$8 \cdot X = 16 \cdot 24$$

÷2  
x2

arrows point towards X

$$X = 24 \cdot 2 =$$

Either one works

÷3

$$X = 16 \cdot 3 =$$

Invariant  
principle  
for addition

+ # to one  
- # from other

DO THE  
OPPOSITE!

---

invariant  
principle for  
differences  
(subtraction)

DO SAME!

---

48

= 48

one works

$$8 \cdot x = 16 \cdot 24$$

$x = 16 \cdot 3 =$   
Invariant princ  
Do The

(4)

$$\frac{6}{25} = \frac{18}{x}$$

Do The Same

$$x = 25 \cdot 3 = 75$$

Invariant princip  
quotien  
fraction  
ratios  
When =, propor

(5)

$$\frac{x}{21} = \frac{8}{3}$$

EASIER  
THIS  
TIME

Invariant princ.

$$x = 7 \cdot 8 = 56$$

$$\frac{3x}{21} = \frac{8}{3}$$

$$3x =$$

$$x =$$

= 48

rule for products

Opposite!

triney!

rule for

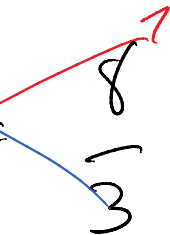
ts

ts

ctions

TERMS

(21)(8)



Cross product

168

$$\frac{168}{3} = 56$$

100%  
Princ.

$$x = 7 \cdot 8 = 56$$

(6)

$$\frac{5}{2} = \frac{8}{x}$$
  

$$2 \times 1.6 = 3.2$$

*NOT easier*

$x \cdot 1.6$

5x

$$\frac{5}{2}$$

$$5x =$$

$$x =$$

(7)

$$23 = x - 5n$$

$$x = 23 + 5n$$

alone on the

$$S = a + a$$

$$a = S - a$$

$$a = S - a$$

le

(8)

$$16 + x = 24$$

Sum

$$a = S - a$$

$$x = 24 - 16$$

$$\frac{8}{3} = 2\frac{2}{3}$$

---

$$\frac{8}{3} = 2.6$$

Easier

$$\frac{16}{5} = 3\frac{1}{5}$$
$$= 3.2$$

---

this side = sum

+ on this side

mediately to  
ft is the sum

# Math Methods Review

(1)

DO  
The  
opposite

$$2806 + 5465 = 2836 + X$$

invari

+30

-30

$$X = 5465 - 30 = 5435$$

(2)

$$6318 - X = 6518 - 3741$$

-200

-200

$$X = 3741 - 200 = 3541$$

(3)

$$8 \cdot X = 16 \cdot 24$$

÷2

↑

1

Inv

Invariant principle  
for sums  
(addition)

A new  
point  
to the  
side  $w/x$

---

Invariant  
principle  
for differences  
(subtraction)

Do SAME

---

Invariant  
principle for



$$8 \cdot x = 16 \cdot 24$$

↑  
x 2

$$x = 24 \cdot 2 = 48$$

← same

$$8 \cdot x = 16 \cdot 24$$

↑  
x 3

÷ 3

$$x = 16 \cdot 3 = 48$$

(4)

$$\frac{6}{25} = \frac{x}{x}$$

x 3

$$x = 25 \cdot 3 = 75$$

Invariant for

Do S

fractions  
quotients  
ratios  
if they are =, proportion

(5)

$$\frac{x}{1} = \frac{8}{2}$$

x 7

EASY

not

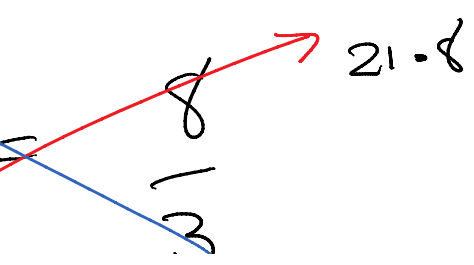
$$\frac{3x}{21}$$

principle for  
products  
(multiplication)  
OPPOSITE

---

principle  
quotients  
(division)  
SAME

---



EASY

$$\frac{\quad}{21} = \frac{\quad}{3}$$

x7

$$x = 7 \times 8 = 56$$

Invariant Principle

not so easy

~~$21$~~

$3x =$

$3x =$

$x =$

Cross p

(6)

hard

$$\frac{5}{2} = \frac{8}{x}$$

x 1.6

EASY

$5x =$

~~$5$~~

~~$2$~~

$5x =$

$x =$

(7)

$$\frac{a}{(23)} = \frac{s}{(X)} - \frac{a}{(5n)}$$

directly to the left of - is a sum

$s =$

$a =$

$$\frac{21}{3}$$

$$21 \cdot 8$$

$$168$$

$$\frac{168}{3} = 56$$

product rule

---

$$\frac{8}{5} \rightarrow 2 \cdot 8 = 16$$

$$16$$

$$16 / 5 = 3 \frac{1}{5}$$

$$= 3.2$$

---

$$a + a$$

$$5 - a$$

$$S = a + a$$

$$X = 23 + 5n = 5n + 23$$



# Math Methods Review

①

$$2806 + 5465 = 2836 + X$$

┌──────────────────────────────────┐  
+ 30  
└──────────────────────────────────┘

└──────────────────────────────────┘  
- 30  
┌──────────────────────────────────┐

← always  
towards  
w/ x

$$X = 5465 - 30 = 5435$$

②

Invariant  
principle

for  
differences  
(subtraction)

SAME

$$6318 - X = 6518 - 200$$

└──────────────────────────────────┘  
- 200

$$X = 3741 - 200$$

③

$$8 \cdot X = 16 \cdot 24$$

┌──────────────────┐  
↓    ÷ 2  
↑

point  
size

Invariant  
principle

for sums

(addition)

opposite  
thing

---

3741

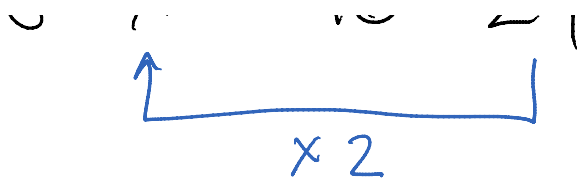
= 541

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Invariant  
principle

for products





$$x = 24 \cdot 2 = 48$$

$$8 \cdot x = 16 \cdot 24$$



$$x = 16 \cdot 3 = 48$$

Same answer

(4)

$$\frac{6}{25} = \frac{18}{x}$$

$$x = 25 \cdot 3 = 75$$

lv

terms }  
 { quotients  
 { fraction  
 { ratio  
 { if they are =, proportion

(5)

$$\frac{x}{21} = \frac{8}{3}$$

$$x = 7 \times 8 = 56$$

EASY

Inva

for products  
(multiplication)

→ opposite

---

invariant  
principle  
for quotients  
(division)

→ SAME

---

r. Princ.  
Quotients

$\overbrace{\hspace{10em}}^{x7}$

$3x$   
**HARD**

$$\frac{x}{21} = \frac{8}{3}$$

$8 \cdot 21$

$$3x = 8 \cdot 21$$

$$3x = 168$$

$$x = 168 \div 3$$

$$= 56$$

(6)

$\overbrace{\hspace{10em}}^{x1.6}$

$$\frac{5}{2} = \frac{8}{x}$$

$x = 2 \cdot (1.6) = 3.2$

**HARD**

$5x$

$$\frac{5}{2} = \frac{8}{x}$$

$2 \cdot 8 = 16$

$$5x = 16$$

$$x = \frac{16}{5} = 3 \frac{1}{5}$$

**EA**

(7)

$$(23) = \boxed{x} + (5n)$$

$a$        $s$        $a$

$\uparrow$  directly to the left of  $-$ , it is the sum

$$s = a + a$$

$$x = 5n + 23$$

$S =$

$a =$

Cross Product

---

SY

3.2

---

$$a + a$$

$$s - a$$

X

